ARI Research Note 87-75

NTC TACTICAL DATABASE PRELIMINARY DESIGN
(Revised)

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for

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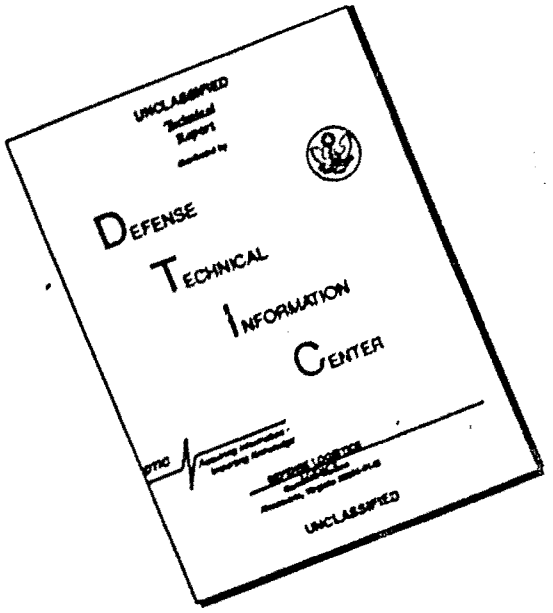

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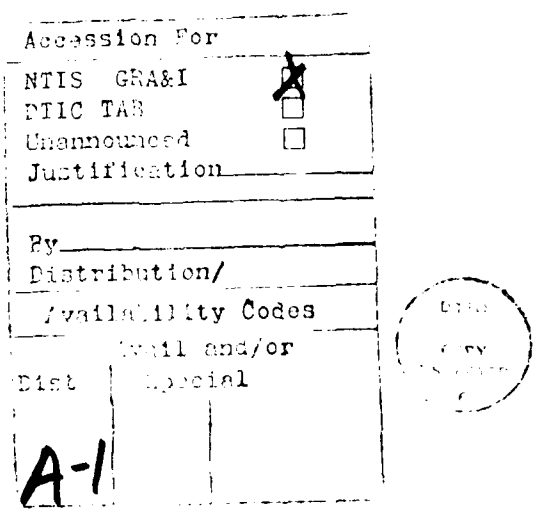

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This research note documents the finalized design of the revised NTC Tactical Database. In its preliminary form, this document was distributed to potential users of the Database in order to solicit their comments, and factor their input into the total design. All recommendations were reviewed, and relevant additions were made prior to the detailed design phase.

In its present form, the note represents the Tactical Database as developed. It includes some background, i.e. the rationale for the two-layered database approach, the naming convention adopted for tactical databases, and the explicit format for each of the nineteen tables that the final Tactical Database contains.

It may be used as a planning document for NTC research and analysis efforts, including the design of derivative technical (issue-oriented) databases.

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18. Subject Terms (Continued)

IFACS
Pairing Event

NTC TACTICAL DATABASE PRELIMINARY DESIGN (Revised)

CONTENTS

1.0 Introduction (Revision 4/23/87)

The NTC Database Development Plan specified a series of four steps to be accomplished leading to a revised NTC database system. The initial step was specification, which defined, from the perspectives of prospective users, the data elements that should be included in the new database. An intermediate outcome of the specification phase was a series of data sheets prepared by prospective database users that laid out their "wish list". Analysis of this user input showed that it was clearly impossible to design a single database that would satisfy all upcoming requirements for NTC research. Accordingly, a new design approach was devised. The new approach divided the database development into two databases, a tactical database containing all digital data that would be required to support ongoing and upcoming research efforts, and a technical database derived from the tactical database that would support specific research efforts. This approach was adopted for two reasons:

(1) Use of the Tactical database concept allows its design and development to proceed immediately, since it contains virtually all data from the digital data sources, and these data are now known. Further, since the concept provides for the retention of all possible digital data, these data will be directly available when they are needed for special studies and for deriving the Technical Database(s). Another benefit of the Tactical Database will be the automatic production of several "quick-look" summaries which have potential in highlighting training issues.

(2) It allows the contents of the Technical database(s) to be defined later in the game, so that changing research goals will have a less drastic impact on the database development schedule. Indeed, if multiple research projects are being pursued concurrently, each could theoretically have its own specially tailored and dedicated Technical Database. This paper documents the proposed preliminary design of the NTC Tactical Database. The design includes all relevant data from both NTC digital data sources, the CIS log and the RDMS log. As in any design, compromises had to be made as to the kinds and frequency of the data that were included. Because the Technical database is basically derived from the Tactical database, design of the Technical database will begin only when the Tactical database preliminary design has stabilized.

The proposed design resembles the existing NTCDRS with the deletion of superfluous table definitions and expansion to include new tables and new elements in tables previously defined. 19 tables have been defined, for which section 2 below presents element names, element descriptions, and units for each table:

(1) Mission Identification Table (MID),
(2) Player State Initialization Table (PSIT),
(3) Player State Update Table (PSUT),
(4) Unit State Initialization Table (USIT),
(5) Unit State Update Table (USUT),
(6) Unit Type Table (UTT),
(7) Player/ Vehicle/ Weapon Code Table (PVWT),
(8) Firing Event Table (FET),
(9) Pairing Event Table (PET),
(10) Communication Table (CT),
(11) Ground Player Position Location Table (GPLT),
(12) Air Player Position Location Table (APLT),
(13) IFCAS Target Table(IFTT),
(14) IFCAS Target Group Table (IFGT),
(15) IFCAS Missions Fired Table (IFMF),
(16) IFCAS Casualties Table (IFCT),
(17) Minefield Casualities Table (MCT),
(18) Control Measure Table (CMT), and
(19) Control Measure Add Table (CMA).

The table types and their compositions have been chosen to allow for the inclusion of the maximum amount of information in a format that will facilitate access for the kinds of research issues that have been defined to date. The table descriptions have been purposely kept as simple as possible to allow review of the structure and content without overwhelming the reviewer with reams of documentation. More complete element definitions will be available in the Programmers' Guide to NTC Data, which will provide a comprehensive guide to NTC digital data.

A separate database will be generated for each mission segment. The database name will be an eight-character code constructed as follows:

Character 1 - Either A for an Armored task force or M for a Mechanized task force.

Character 2 - A code letter (A=1,B=2,C=3,...) specifying which NTC History within the Rotation that this segment is from. Note : Within each rotation and for each Task Force the historical data are saved in one to five separate sets of tapes, or Histories, the extents of which are determined by NTC operations personnel.

Characters 3,4 Fiscal Year (1 Oct - 30 Sept).

Characters 5,6 Rotation number (01-14).

Characters 7,8 The Segment number within the specified History.

2.0 Description of NTC Tactical Database Tables

This section describes the contents of each table in the Tactical Database. It includes the explicit layout, element by element, for each of the 19 tables.

2.1 Mission Identification Table (MID)

The Mission ID table provides all information required to completely identify and categorize a mission segment.

Element Name	Element Description	Units
MSTART	Mission start date and time	20 Char
MEND	Mission end date and time	20 Char
MHISTORY	History Name	10 Char
MSEGMENT	Segment Number	3 Char
MTYPE	Mission Type	20 Char
MORG	Unit ID	20 Char
MTF	A(rmored) or M(echanized)	1 Char

2.2 Player State Initialization Table (PSIT)

This table describes the player list at the beginning of the mission segment. It includes all players, Opfor, Bluefor, and White.

Element Name	Element Description	Units
PID	Player identification (Bumper number)	3 Char
LPN	Logical Player Number	3 Char
SIDE	B(lue), O(pfor), or W(hite)	1 Char
INST	I(nstrumented) or N(ot instrumented)	1 Char
PTYPE	Player Type Code (See Type Code Table)	2 Char
ORG	Next higher Line Unit	20 Char
TRACK	T(racked) or U(ntracked)	1 Char
PSTAT	Player Status Code	1 Char

2.3 Player State Update Table (PSUT)

The Player State Update table tracks changes to all players throughout the duration of the mission segment.

Element Name	Element Description	Units
TIME	Date and Time of Update	20 Char
PID	Player identification (Bumper number)	3 Char
LPN	Logical Player Number	3 Char
SIDE	B(lue), O(pfor), or W(hite)	1 Char
INST	I(nstrumented) or N(ot instrumented)	1 Char
PTYPE	Vehicle Type Code (See Type Code Table)	2 Char
ORG	Next higher Line Unit	20 Char
TRACK	T(racked) or U(ntracked)	1 Char
PSTAT	Player Status Code	1 Char

2.4 Unit State Initialization Table (USIT)

The Unit State table describes Opfor and Bluefor units at the beginning of the mission segment.

Element Name	Element Description	Units
UNIT	Unit Name	20 Char
LINU	Next Higher Line Unit	20 Char
STAU	Next Higher Statistical Unit	20 Char
UTYPE	Unit Type Code (See Unit Type Table)	3 Char
UFORCE	Force Code (R or B)	1 Char
UECH	Echelon	3 Char

2.5 Unit Type Table (UTT)

The Unit Type table contains information relating to unit organizations.

Element Name	Element Description	Units
UCODE	Unit Type Code	3 Char
UNFOR	Unit Force (R or B)	1 Char
UNECH	Echelon identifier	3 Char
UNDESC	Unit Description	20 Char

2.6 Unit State Update Table (USUT)

The Unit State Update table tracks changes to all units throughout the duration of the mission segment.

Element Name	Element Description	Units
TIME	Date and Time of Update	20 Char
UNIT	Unit Name	20 Char
STAU	Next Higher Statistical Unit	20 Char
UTYPE	Unit Type Code	3 Char

2.7 Player/ Vehicle/ Weapon Code Table (PVWT)

The Weapon Code table defines a unique code for each weapon present on the battlefield. The codes will be the same as the MILES codes.

Element Name	Element Description	Units
PSIDE	Side Code (R or B)	1 Char
PTYPE	Player Type Code	2 Char
PVEH	Vehicle Description	15 Char
PMILES	MILES Weapon Code	2 Char
PWPN	Weapon description	15 Char
PAMMO	Initial Ammunition Load	5 Char

2.8 Firing Event Table (FET)

This table will maintain a time-ordered record of all legitimate firings recorded by the RDMS.

Element Name	Element Description	Units
TIME	Date and Time of Fire Event	20 Char
PID	Player ID	3 Char
LPN	Logical Player Number	3 Char
WPN	MILES Weapon Code	2 Char
X	Position location X coordinate	5 Char
Y	Position location Y coordinate	5 Char
AMMO	Ammunition Remaining	5 Char

2.9 Pairing Event Table (PET)

The Pairing table will maintain a time-ordered record of legitimate pairing events. This table will also contain information relating to the firer if the pairing event can be matched with a fire event.

Element Name	Element Description	Units
TIME	Date and Time of Pairing	20 Char
TPID	Target ID	3 Char
TLPN	Target LPN	3 Char
RESULT	N(ear miss), H(it), K(ill)	1 Char
FPID	Firer ID	3 Char
FLPN	Firer LPN	3 Char
FWPN	Firer Weapon Type (MILES)	2 Char
FRAT	Fratricide Indicator (Y/N)	1 Char
TX	Target position location X coordinate	5 Char
TY	Target position location Y coordinate	5 Char
FX	Firer position location X coordinate	5 Char
FY	Firer position location Y coordinate	5 Char

2.10 Communication Table (CT)

This table will maintain a record of all commo events (Key Depressed/ Released) for the mission segment.

Element Name	Element Description	Units
TIME	Date and Time of Commo Event	20 Char
CPID	Player ID	3 Char
CLPN	LPN	3 Char
NET	Radio Net (1 or 2)	1 Char
TTIME	Duration of transmission in seconds	5 Char

2.11 Ground Player Position Location Table (GPLT)

This table will maintain a time-ordered record of Position location (PL) X and Y coordinates for each instrumented ground player. PL will be recorded at an operator-selected interval.

Element Name	Element Description	Units
TIME	Date and Time of PL	20 Char
PLPID	Player ID	3 Char
PLLPN	LPN	3 Char
X	Position location X coordinate	5 Char
Y	Position location Y coordinate	5 Char

2.12 Air Player Position location Table (APLT)

This table will maintain a time-ordered record of Position location (PL) X Y, and Z coordinates for each instrumented air player. PL will be recorded at operator-selected intervals.

Element Name	Element Description	Units
TIME	Date and Time of PL	20 Char
PLPID	Player ID	3 Char
PLLPN	LPN	3 Char
X	Position location X coordinate	5 Char
Y	Position location Y coordinate	5 Char
Z	Position location Y coordinate	5 Char

2.13 Indirect Fire Casualty Assessment (IFCAS) Target Table (IFTT)

This table will contain a list of pre-planned indirect fire (IFCAS) targets and their locations.

Element Name	Element Description	Units
IFTARG	IFCAS Target Name	5 Char
IFSIDE	Side (R or B)	1 Char
IFNUM	Target Index	5 Char
IFTX	Position location X coordinate	5 Char
IFTY	Position location Y coordinate	5 Char

2.14 IFCAS Target Group Table (IFGT)

This table will contain a list of pre-planned IFCAS targetgroups and their component targets.

Element Name	Element Description	Units
IFGROUP	IFCAS Target Group Name	10 Char
IFGSIDE	Side (R or B)	1 Char
IFTARG1	IFCAS Target Name #1	5 Char
IFTARG2	IFCAS Target Name #2	5 Char
IFTARG3	IFCAS Target Name #3	5 Char
	o	
	o	
	o	
	(Up to 10 Targets)	

2.15 IFCAS Missions Fired Table (IFMF)

This table contains a list of all IFCAS missions fired during this mission segment. The elements present in this table are determined by how the data are specified. For instance, an IFCAS mission can be specified either by using a preplanned mission number or a service request. If a service request is specified, the target location can be given either by using a target group name or target coordinates.

Element Name	Element Description	Units
TIME	Date and Time of IFCAS mission	20 Char
IFMISS	IFCAS Preplanned Mission Number	5 Char
IFFORCE	Force Code (R or B)	1 Char
IFBAT	Battery Identification	20 Char
IFTARG	IFCAS Target Group Name	5 Char
IFTX	IFCAS Target X coordinate	5 Char
IFTY	IFCAS Target Y coordinate	5 Char
IFWT	IFCAS Weapon type code	2 Char
IFST	Shell Type Code	2 Char
IFFT	Fuse Type Code	2 Char

2.16 IFCAS Casualties Table (IFCT)

This table contains a list of all casualties assessed as a result of IFCAS missions fired during this mission segment.

Element Name	Element Description	Units
TIME	Date and Time of IFCAS mission	20 Char
IFMISS	IFCAS Mission ID	5 Char
IFFORCE	Force Code (R or B)	1 Char
IFPID	ID of player killed by IFCAS	3 Char
IFLPN	LPN of player killed by IFCAS	3 Char
IFTX	Target position location X coordinate	5 Char
IFTY	Target position location Y coordinate	5 Char

2.17 Minefield Casualties Table (MCT)

This table contains a list of all casualties assessed as a result of minefields during this mission segment.

Element Name	Element Description	Units
TIME	Date and Time of minefield casualty	20 Char
MCPID	ID of player killed by minefield	3 Char
MCLPN	LPN of player killed by minefield	3 Char
TX	Target position location X coordinate	5 Char
TY	Target position location Y coordinate	5 Char

2.18 Control Measure Table (CMT)

The Control Measure Table contains a list of all control measures used during the mission segment.

Element Name	Element Description	Units
FORCE	1:Blue, 2:Opfor	1 Char
TACCAT	Operating System Code: 0 : Maneuver 1 : Fire Support 2 : Intelligence 3 : Mobility/ Counter mobility 4 : Communications 5 : Air Defense 6 : Unspecified	1 Char
ECHELON	Echelon code : 0 : Platoon 1 : Company 2 : Battalion 3 : Regiment/ Brigade 4 : Division	1 Char
CMTYPE	Type : 1=Point, 2=Line, 3=Area	1 Char
CMPURP	Purpose (Codes TBD)	10 Char
CMMINE	Mine TYpe (if applicable)	4 Char
CMPOINTS	Number of points used	5 Char
CMX1	X coordinate, point 1	5 Char
CMY1	Y coordinate, point 1	5 Char
CMX2	X coordinate, point 2	5 Char
CMY2	Y coordinate, point 2	5 Char
CMX3	X coordinate, point 3	5 Char
CMY3	Y coordinate, point 3	5 Char
	o o o	
	(Up to 12 points)	

2.19 Control Measure Add Table (CMA)

The Control Measure Table contains a list of all control measures used during the mission segment.

Element Name	Element Description	Units
TIME	Date and Time Control Measure Added	20 Char
FORCE	1:Blue, 2:Opfor	1 Char
TACCAT	Operating System Code: 0 : Maneuver 1 : Fire Support 2 : Intelligence 3 : Mobility/ Counter mobility 4 : Communications 5 : Air Defense 6 : Unspecified	1 Char
ECHELON	Echelon code : 0 : Platoon 1 : Company 2 : Battalion 3 : Regiment/ Brigade 4 : Division	1 Char
CMTYPE	Type : 1=Point, 2=Line, 3=Area	1 Char
CMPURP	Purpose (Codes TBD)	10 Char
CMMINE	Mine Type (if applicable)	4 Char
CMPOINTS	Number of points used	5 Char
CMX1	X coordinate, point 1	5 Char
CMY1	Y coordinate, point 1	5 Char
CMX2	X coordinate, point 2	5 Char
CMY2	Y coordinate, point 2	5 Char
CMX3	X coordinate, point 3	5 Char
CMY3	Y coordinate, point 3 o o o (Up to 12 Points)	5 Char